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A Review of Applied Techniques of the Detection of Criminal Deceit

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Abstract

The techniques of the detection of criminal deceit, including lie-detection technique and true-detection technique, are involved in determination and evaluation of response to specific information in the guilt knowledge. Under the support of a theory of emotion, a theory of control, a theory of cognitive processing and a theory of self-expression in the contemporary applied psychology and judicial psychology, this technique system has developed a psychophysiological technique, a non-verbal technique, a verbal technique, a brain scanning technique and a strategic use of evidence etc. Based on different aspects of deceit psychology, the techniques of the detection are explored from different mechanisms. With the support of judicial experience, and foundation from the empirical researches on physiology-psychology, cerebral nerve and other aspects, the techniques have validity and reliability at a different level.

Key words: Psychophysiological technique; Non-verbal technique; Verbal technique; Strategic use of evidence

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INTRODUCTION

The techniques of the detection of criminal deceit, based on the basic principle of applied psychology and

judicial psychology, are involved in determination and evaluation of the possibility of criminal suspects' criminal facts, being the psychological assessment techniques to identify and determine the relationship between the tested person and the case, as well as the relevant situation of the case. The techniques of the detection of criminal deceit are commonly known as "lie-detection techniques", in essence, they include lie-detection technique and true-detection technique. In 1885, a famous criminologist, Cesare Lombroso (1835-1909) tried to manufacture the first set of polygraph—a hydraulic pressure sphygmograph. The modern techniques of the detection of criminal deceit originated from the United States of the early 20th century, where the criminal investigators carried out the exploration of psychophysiological technique to improve efficiency of handling a case (Polygraph & Larson, 1921) and its variants: control question test (CQT) and guilt knowledge test (GKT), and then expanded to the non-verbal technique with an orientation of the body language, facial expression and micro-expression, the verbal analysis technique with the core of statement of validity assessment (SVA) and reality monitoring (RM), as well as new developments under the support of brain cognitive science and technology: brain scanning technique, technique of voice stress analysis and strategic use of evidence.

1. THEORETICAL FOUNDATION

The basic principle of psychology in the detection of criminal deceit is that there is an interaction inner link between the perpetrator's behavior and psychology, and the inner psychological facts can be inferred from the perpetrator's behavior (including explicit and implicit reactions). Specifically, in support of the techniques of the detection of criminal deceit, the principle of psychology involves in a theory of emotion, a theory of control, a theory of cognitive processing and a theory of self-

expression. In the theory of emotion, the liars may be betrayed by their emotions which can be greatly wakened automatically, such as tension and fear, especially when the liar forecasts that lying will produce negative consequences. Therefore, these corresponding emotions and physiological reactions can be detected and then the lies may be exposed. In the theory of control, because the liars realize that their own internal mental processes (such as emotions) may cause the appearance of deceit clues, they make efforts to reduce such clues. Then, the control of subjective efforts just becomes the deceit clues, such as the performance of nervousness, change of respiratory rate and rigid behavioral response caused by the efforts of inner inhibitory. In the cognitive theory, telling a lie is a cognitive process which is more complex than that of telling the truth. For example, the liars need to monitor the reaction of himself and testers (activate more brain centers), and need to remind himself of playing roles well; this tense and complex cognitive task may produce behavioral clues which are different as usual, such as less physical activities and longer pause in conversation. The theory of self-expression emphasizes that the liars and the person who tells the truth have a same goal in their hearts: to show sincerity; the liars' self-expression is embodied by self-regulating their own behaviors to present a particular impression. The difference with the person who tells the truth is that the statement of the person who tells the truth has a practical basis; the statement of the liars is illegal or unmoral due to their so-called "sincere statement". The liars may psychologically accept the lower level of "authenticity" of the statement unconsciously. Accordingly, they will produce more negative emotions, and more tension performance.

Under the support of these psychological theories of deceit, the applied techniques developed from the detection of criminal deceit mainly include four categories: psychophysiological technique, non-verbal technique, verbal analysis technique and other techniques.

2. PSYCHOPHYSIOLOGICAL TESTING TECHNIQUE

The psychophysiological testing technique is the firstly used physiological technique to identify the lies in the detection of criminal deceit, which is designed based on the principle of psychophysiological relations and has nearly a hundred years of history so far. When the criminal suspects face a particular (related to the crime) problem, under the role of the autonomic nervous system, they may automatically generate physiological responses; a basis for judgment of the psychophysiological testing technique is the heart rate, blood pressure, respiratory rate, skin conductance and other conventional indicators. Such technique mainly includes six stages: dynamic analysis of criminal

psychology, compiling of cognitive comprehensive test methods, an interview prior to the test, measured operation, observation and synchronous review figures, comprehensive evaluation of figures, conversation after the test, and questioning.

The main techniques of the crime psychophysiological test are control question test (CQT) and guilt knowledge test (GKT). The technique of CQT has been commonly used; it makes a judgment by comparing the test object's intensity of psychophysiological responses between the control problem (or called as "criterion problem") and (crime) related issues: the intensity of real criminal suspect's psychophysiological response to the related issues is stronger than that to the control problem; the intensity of false criminal suspect's psychophysiological response to the control problem is stronger than that to the related issues.

The direct target of GKT is to investigate guilt knowledge (information) concealed consciously or subconsciously by the criminal suspects: By a way of asking a series of questions (each question has multiple choices for answer, of which only one choice is correct). There is a hypothesis: the real criminal suspects may make efforts to conceal their guilt knowledge or information, but they may automatically generate a stronger psychophysiological response when correct answers and information are presented. The false criminal suspects may present the same or similar psychophysiological response in the face of all answers, because they do not know the guilt knowledge or information.

Laboratory experiments show that, for determination of criminal suspects and exclusion of criminal suspects, an accuracy rate of the technique of CQT is respectively 74%-82% and 60%-84%; for determination of criminal suspects and exclusion of criminal suspects, an accuracy rate of the technique of GKT is respectively 76%-88% and 83%-99%. That is, CQT has its advantages for determination of criminal suspects, while GKT has a higher accuracy for exclusion of criminal suspects. However, if the tested criminal suspects have test experience, training of the confrontation test, physical fatigue and illness, etc., the accuracy of technique of crime psychophysiological test will be heavily interfered.

3. NON-VERBAL TECHNIQUE

Many scientific studies try to find non-verbal indicators of telling lies. In addition to psychophysiological response, the explicit body language has become another direction of exposing lies. Non-verbal technique points at the difference in the aspects of physical activities (hand signals and activities of feet), facial clues (eye contact, smile clues) and verbal behavioral clues (response delay, tone) in the face of particular information or knowledge by the real criminal suspects and false criminal suspects. There is no evidence to show that there are differences in

the explicit behavior between the liars and the personnel who tells the truth (generally speaking, there is no close relation between non-verbal information and the behavior of being honest or telling lies). However, the study also finds out a small number of reliable clues of non-verbal information about deceit behavior: the liars tend to speak in a higher tone, accompanied with stronger tension in conversation (probably psychophysiology is highly wakened). Of course, such difference is generally small, which can only be investigated by specific equipment; the liars speak in negligence, with many errors (repetition of word and sentence, incomplete sentences, inaccurate pronunciation); the delay in answering by lies is common; the liars tend to speak short sentences, without more explanation (accompanied with more activities of hands and feet to emphasize the content of speech); the activity of speech is more passive (not an active expresser); more negative statements are made; they try to avoid eye contact with the questioner and feel restless. It is important to pay attention that, in the non-verbal technique, if the criminal suspects have experience in standing trial or interrogation, or have prepared for requiring, predictive effect of non-verbal information will be greatly reduced.

4. VERBAL ANALYSIS TECHNIQUE

Due to low accuracy of the non-verbal technique, the researchers have conducted new strategies of investigating lies in the last two decades: analysis of the content of speech, that is, direct analysis of the content of speech rather than the way of speech. The most prominent speech analysis techniques (tools) are the statement of validity assessment (SVA) and reality monitoring (RM). The essence of SVA is to assess the authenticity of the statements. This technique originates from the practice of child's testimony credibility in the face of child sexual abuse cases by the German judicial psychologist, rather than the scientific research. The basic hypothesis is that the statements of real experience are different from that of the fictional and imagined content. The basic approach of such technique is to allow the tested personnel not to be disturbed in the semi-structured interview, or to make free statements implicitly; for the content of written statement, the tool of criteria-based content analysis (CBCA) can be used for assessment of statement credibility; then, "validity checklist" can be used to explain the results of assessment of CBCA. The tool of CBCA is a clue to search true words (rather than false words). In the widely used standard (1989) of CBCA tools (19 assessment items), the most effective criteria is the amount of detail, unstructured statement, embedding of background information, duplicate information and other entries. It has gained more confirmation in the aspect of child's testimony credibility in the child sexual abuse cases. Of course, a great disputer lies in whether the verbal validity assessment with CBCA as a representative has a higher effectiveness in all

criminal cases (including adult cases, non-violence cases, etc.).

RM technique is another new development trend of the verbal analysis technique. Based on the research result of human memory, it detects the verbal differences between the true statements and false statements. The basic concept is that the memory of real experience is different from that of the fictional and imagined events: the true memory can be obtained by perception, so as to obtain perceptual information and background information; the fictional information originates from inner cognitive processing, so more cognitive operation (thinking and reasoning) results are expressed. Accordingly, true events are reflected by telling the truth, while fictional events are reflected by telling lies. The representative assessment tool is the standard of reality monitoring (RM, 1997), five criteria of true words: clarity, perception information, spatial information, temporal information, emotional information, reconstruction and reality of events; a standard of false words: cognitive operability. Subsequently, there are new developments in verbal analysis techniques, such as the technique of scientific content analysis (SCAN) with emphasizing verbal changes and statement negation as core criteria.

In the verbal analysis technique, the techniques of SVA and RM have similarities (the key is to find out standard clues of true words) and differences (the former originates from the demands of judicial practice, while the latter originates more from the purpose of the study). They all depend on the experience or the standards developed in the study to investigate and examine the authenticity of the content of speech, but the standards are not the same. They all require specific training to implement effective assessments. The standardized questions are required to be developed in the assessments. An average accuracy rate of testing the true words is about 70%. But now, RM technique is more recommended due to its easy implementation and high accuracy.

5. RECENTLY DEVELOPED ASSESSMENT TECHNIQUES

Under the influence of related disciplines and technological progress, the techniques of the detection of criminal deceit also have some other new developments: technique of brain scanning, technique of voice stress analysis, and strategic use of evidence.

One of the commonly used scanning techniques to check the activity of the human brain is functional magnetic resonance imaging (fMRI). In recent years, it has been used in the investigation of brain activity when individuals tell lies. One of the most prominent investigative signals is a stronger activity signal in the prefrontal lobe of the brain detected by fMRI when individuals tell lies. It is interpreted as telling a lie needs

more complex and intense cognitive activities than telling the truth. However, it is too early to put into judicial application, because such confirmed research conclusions have not been universally proved; in addition, its testing process requires a higher level of precision control (similar to strictly controlled laboratory experiments, which shall minimize the interference of external stimulation and inner activity of main body), which has many obstacles and risks in the face of the criminal suspects to seek for avoiding exposed judicial applications (especially in the face of conflict of the problems in need of clam state of mind and urgent guilt knowledge, how to control inner activities of the criminal suspects). In addition, the high cost of testing equipment is also one of the factors to affect the promotion and application. Currently, the testing technique of brain imaging is applied to lies detection in the criminal justice, but it is really helpful to explore the trace of brain cognitive activity when the individuals have deceit behavior.

The technique of voice stress analysis is an application of detection of criminal deceit in the psychophysics. Its essence is to analyze the change features and regularity of the liars' voice. In general, there are two kinds of technique of voice stress analysis, namely, voice stress analysis (VSA) and layered voice analysis (LVA). The theoretical hypothesis of VSA is to infer the speaker's inner state through analysis and determination of activities of main voice muscles. The core view is that the specific muscle group may automatically generate a slightly trembling phenomenon which is different from telling the truth when the speaker makes a voice, which can be detected by a precision instrument. In this regard, some acoustic experts question the existence of such trembling, or think that it just has some special phenomena of specific individuals, without its common nature. Some scholars believe that, even if there is trembling, there is also a need to prove the extent of significance of diagnosis of telling lies. LVA is to analyze errors in the process of telling lies mainly by the use of computer program to process the digitized voice information; these covert voice errors can be only detected through complex computer programs, so as to infer the existence of telling lies. In this regard, the clinical psychologist also has skeptical views.

Different from paying much attention to the activities of the inspectors of telling lies, the strategic use of evidence (SUE) tries to, from another new point of view, use some strategies to mobilize liars' inner initiative, and "shows" illogicality or error caused by telling lies in an invisible detection or questioning pressure, so as to disclose the facts of telling lies from the rational level. The theoretical basis of psychology includes instrumental mind reading, self-regulation psychology and guilt psychology. The specific strategies include: interrogation of criminal suspects by the inspector of telling lies; understanding of the cases and background

information of criminal suspects; presentation of available evidence and materials face to face or strategically (step by step, in stages) to the tested person in conversation or interrogation. Then, under the pressure of urgency, wrong response information of the criminal suspects can be disclosed, even the lies can be disclosed or the criminal suspects are directly forced to confess the criminal facts. It is a relatively circuitous and covert stress technique, rather than a strategy to detect head-on confrontation with the inspector and criminal suspects. This is a testing technique with an extensive judicial practicability, which has reflected its value in the criminal justice practices. One condition specially required in the application is that the criminal suspects could not determine the case evidence of the inspectors and trial person (this is very common in the majority of criminal cases). Of course, a further research needs to clarify the regulation factors of this technique effect in different types of cases, such as the step and extent of the type of evidence, personality factors of the perpetrator, and the influence of the criminal suspects in the use of confrontation strategy.

CONCLUSION

In the activities of confronting crimes and detecting deceit, based on a theory of emotion, a theory of control, a theory of cognitive processing, a theory of self-expression and psychology, human has summed up the psychophysiological technique, non-verbal technique, verbal technique and other techniques through the scientific research in the laboratory and exploration of judicial practice. Currently, they are not mature application techniques, but they can explain the features and modes of lies or deceit in a certain degree or extent. As an earlier used testing technique, the psychophysiological technique has more experimental and empirical support. The technique of control question is helpful to detect real liars, while the technique of guilt knowledge has a significant accuracy rate to exclude false liars. Similar testing techniques through physiological instrument, such as brain scanning technique and voice stress analysis technique, still require a lot of empirical researches to confirm its reliability and stability. Non-verbal techniques have some knowledge base of interpersonal psychology, but individual differences among the true and false criminal suspects, and interpersonal interaction of the inspectors may often affect the testing accuracy; meanwhile, its experience is often more than empirical scientific evidence. For the verbal techniques, because the verbal content has difference between telling the truth and telling lies (such as logicity and regularity of memory), and there are inspection and correction of judicial practice, the application of the assessment tools is promoted constantly, with a more obvious effect especially on the child sexual abuse and other specific cases. The reality monitoring technique has obtained recognition of scientific research

and practice. In addition, the strategic use of evidence to present the step and extent by the inspectors who take initiative to grasp evidence is a mode combining the person having an effective practical experience with the psychological expert, which has a better application prospect.

Different detection techniques explore the trace of liars' mental activities from different aspects in the criminal phenomenon, but recently fail to reach a level close to maturity. Although they are useful exploration in confrontation of conceit and lies by the professionals and the judicial personnel, there is also a need to further develop a stable psychological evidence and theoretical foundation, so as to enhance the effectiveness and stability to expose the lies.

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